

REMARKS

At the time of the Final Office Action, claims 1-20 were pending. In the Office Action:

- Claims **1–3 and 5–7** were rejected under 35 U.S.C. § 103(a) as being obvious over **Kerai**, U.S. Patent Pub. No. 2002/0005707 in view of **Freeman**, U.S. Patent No. 6,650,089;
- Claim **4** was rejected under 35 U.S.C. § 103(a) as being obvious over **Kerai**, in view of **Freeman**, and **Fischer**, U.S. Patent No. 6,946,817;
- Claims **8–11** were rejected under 35 U.S.C. § 103(a) as being obvious over **Kondo**, U.S. Patent No. 6,151,652 in view of **Freeman** and **Fischer**;
- Claims **12, 13, 15–18 and 20** were rejected under 35 U.S.C. 103(a) as being obvious over **Fischer**, in view of **Hsin**, U.S. Patent Application Publication 2003/0148663, and further in view of **Jeansonne**, U.S. Patent Application Publication 2004/0203275.
- Claim **14** was rejected under 35 U.S.C. 103(a) as being obvious over **Fischer** in view of **Hsin** and **Jeansonne**, and further in view of **Odaohhara**, U.S. Patent No. 6,424,123;
- Claim **19** was rejected under 35 U.S.C. 103(a) as being obvious over **Fischer** in view of **Hsin** and **Jeansonne**, and further in view of **Hsu**, U.S. Patent No. 6,798,173.

Independent claims 1 and 8 have been amended to clarify the scope of the invention. The limitations related to the transistors in the circuits have been moved to new dependent claims 21 and 22 respectively.

The use of reference characters in describing the presently claimed elements below is for illustrative and exemplary purposes only, and is not to be construed as limiting absent an express indication for doing so.

35 U.S.C. §103(A) Obviousness of Claims 1–3 and 5–7 by Kerai in View of Freeman

1. Independent claim 1 has been amended to clarify that the battery selection signal refers to a type of battery, wherein different battery types have different battery charging characteristics.

Applicants have amended claim 1 to provide clarification that the battery selection signal refers to a type of battery, wherein different battery types have different battery charging characteristics.

In the Final Office Action, on p. 4, the Examiner stated:

Kerai does not disclose the charger control portion generating charge control signals at one or more outputs according to a battery selection signal that is output from the main controller and received at an input of the charger control portion, the battery selection signal distinguishing the battery from a plurality of batteries installable in the portable electronic device.

The Examiner then provided the Freeman reference for teaching the deficiencies of the Kerai reference. The Examiner equated the following elements of Freeman with the following elements of claim 1:

Claimed element	Freeman teaching
charge control signals	voltage signals provided by the control system that disables and enables the charger
battery selection signal	switch control signals
charger control portion	control system 82, Fig. 3

In Freeman, a plurality of batteries 48, 50, 52 are provided in a device 40. The user of multiple batteries is advantageous because it permits a portable electronic device to be used for a longer period of time than is possible with a single battery (1:26–29). It is desirable, when operating a multiple battery device, to utilize the battery most able to power the device, which is selected based on one or more parameters [such as voltage level, remaining capacity, battery priority, etc.] 2:43–48; 3:42–46. The voltage levels of the batteries are measured and the remaining capacity of the batteries is determined, and from there, the desired battery can be selected.

However, in Freeman, there is no indication that the batteries used are of different battery types (e.g., Lithium, NiCad, etc.). There is actually a strong suggestion in the disclosure

of Freeman that they are not, given that the charging mechanism shown in Figure 2 illustrates that a common voltage DC is used to provide power to the battery bus 66 via the charger 62 (5:48–65). The differing voltages on the batteries 48, 50, and 52 do not relate to the fact that the batteries are of a different type, but due to the effect of varying degrees of discharge of each of the batteries. These voltages are measured to determine the parameters that can then be used to select the most viable battery for powering the device (2:38–48, 5:48–6:32).

Claim 1 has been clarified to provide that the battery selection signal is not a signal that selects any arbitrary battery from a plurality of batteries in a system, but rather is a battery *type* selection signal, where the type is something that identifies the charging characteristics of the battery.

This is a substantial and non-obvious variation on the disclosure of Freeman. The inclusion of an identification of different battery types (e.g., lithium-ion, nickel metal hydride, nickel cadmium) permits the charger to charge the batteries in accordance with their own specific charging characteristics. As noted in the Specification (p. 2, lines 21–22), if the wrong voltages are sent to a lithium-ion battery, it may explode. Therefore, it is critical that the battery type be recognized and that the battery is charged with the proper charge characteristics.

One can have differing voltages for batteries of the same type. In the charging system according to Freeman, the battery voltages of the different battery packs can vary in voltage (due to being in different states of discharge), but are presumably all the same type of battery (absent any disclosure to the contrary), and are all provided with the same charging signal. In other words, batteries of the same type and requiring same charging characteristics can still have different output voltages due to a particular discharge state.

Conversely, one can have the same voltages for batteries of differing types. For the sake of argument, one could have a number of different battery types, e.g., nickel-cadmium (NiCd, nominal fully charged voltage 1.24v) and nickel metal hydride (NiMH, nominal fully charged voltage 1.2v) in a system that all, coincidentally, have the same output voltage (e.g., both at 1.2v, due to partial discharge state of the NiCd).

Thus, importantly, the output voltage of a battery does not provide an indication of the battery type, and thus, any form of selection in Freeman related to the batteries cannot possibly be a selection based on a battery *type*. The use of voltage as an indicia for selection of the

batteries in Freeman is limited to a selection for providing power, and not as a criterion as to how the battery is charged.

2. *The remaining dependent claims 2–7 are patentable by virtue of their dependence from amended claim 1, and the addition of Fischer in the claim 4 rejection does not fulfill the shortcomings of the Freeman reference.*

Claims 2, 3, and 5–7 are patentable for the reasons argued above, and by virtue of their dependency from claim 1.

In the Final Office Action, on pp 6–7, the Examiner added the Fischer reference in the combination, citing Fischer for its disclosure relevant to the limitations added by dependent claim 4. Without addressing the Examiner’s arguments on their merits, Applicants simply rely on the arguments above, and not that Fischer fails to supplant the deficiencies described above with respect to Kerai and Freeman.

35 U.S.C. §103(A) Obviousness of Claims 8–11 by Kondo in View of Freeman and Fischer

3. *Independent claim 8 has been amended to clarify that the battery selection signal refers to a type of battery, wherein different battery types have different battery charging characteristics.*

In the Final Office Action, on pp. 7–9, the Examiner rejected independent claim 8 as being obvious over the combination of Kondo, Freeman, and Fischer.

Similar to the discussion above with respect to claim 1, claim 8 has been amended similarly, such that the battery selection signal refers to a type of battery, wherein different battery types have different battery charging characteristics.

Kondo discloses battery operation in a manner similar to Freeman, in that Kondo’s switching circuit 141 permits a switching between power supplied from the secondary battery 13 or power supplied via the I/O card 2 as power supplied to the camera circuits 11 (5:57–62). Kondo lacks a teaching or suggestion for a signal related to a type of battery, as now required by the amended claims.

Freeman lacks such a teaching for the reasons argued above with respect to claim 1, and Fischer also lacks such a teaching for the reasons argued above with respect to claim 4.

Claims 9–11 are also not obvious in view of the combination of Kondo, Freeman, and Fischer by virtue of their dependence from amended claim 8 and for reasons argued above.

35 U.S.C. §103(A) Obviousness of Claims 12, 13, 15–18, and 20 by Fischer in View of Hsin and Jeanssone

4. *The combination of Fischer, Hsin, and Jeanssone does not teach or suggest a USB cable comprising a second connector containing a charging portion that communicates with a device controller.*

In the Office Action, on pp. 10–12, the Examiner rejected claim 12 as being obvious over the combination of Fischer, Hsin, and Jeanssone. In relevant part, the Examiner stated (pp. 10–11):

Fischer does not explicitly disclose a USB battery charger enclosed within the first connector neither does Fischer disclose at least two wires electrically connecting the first and second connectors.

Hsin discloses a USB cable for transferring power from a USB receptacle to a portable electronic device (portable device such as a cell phone), the USB cable comprising a USB battery charger enclosed within the connector (a multipurpose USB connector 10, Fig. 2) ([0015], Hsin).

Jeanssone discloses a USB cable (16, Fig 1) at least two wires (a +5 volt wire 30 and a ground wire 32, Fig 2) electrically connecting the first (a first connector end 24, Fig 1) and second connectors (a second connector end 26, Fig 1) ([0016], Jeanssone).

In the Response to Arguments section on pp. 2–3, the Examiner indicated that the Applicants' previous arguments were not persuasive, stating that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. The Examiner stated:

It is noted that it's not Fischer, but it was Hsin reference discloses [sic] a USB cable for transferring power from a USB receptacle to a portable device such as a cell phone, the USB cable comprising a USB battery charger enclosed within a multipurpose USB connector. Thus, it would have been obvious to one of ordinary skill in the art at the time this invention was made to choose the multipurpose USB connector as taught by HIS as modified by Fisher so that the cable provides more flexible charging options.

With regard to the teaching of Hsin, the Examiner indicated Hsin as disclosing a battery charger enclosed within the connector. Applicants disagree with this characterization. Hsin simply teaches a USB connector that can be used for the purpose of charging batteries of various portable electronic apparatuses (Abstract). Although Hsu indicates that it comprises a main body 11 that contains some circuitry 21, it is entirely silent as to what these devices are or what function they serve within the main body.

Thus, Applicants argument is not simply attacking a reference individually when the rejection is based on a combination of references. The Examiner used the Hsin reference as disclosing one of the key features of the claim, namely, the battery charger enclosed within the USB connector. The Examiner did not point to this feature as being disclosed in any of the other references, and thus, the Examiner's mischaracterization as to the teaching of Hsin when relied upon as a key link in the chain of the Examiner's reasoning is relevant to the obviousness of the combination of combination of references and not just the Hsin reference in isolation. Thus, when Applicants assert that Hsin fails to teach or suggest the element that the Examiner is relying on this reference for, it is not simply an attack on a reference individually—it is an attack on the entire combination of references, since none of the additional references teaches this feature.

At best, Hsin can be said to disclose a USB adapter cable used for battery charging that contains some circuit components in a housing. This is insufficient, however, to provide a necessary disclosure for the claimed element that it is being read upon.

The Examiner provided as the motivation for combining the teaching of Hsin with the remaining references as being, "so that the cable provides more flexible charging options". Applicants ask, then, which combination of components should be included within the housing to provide the more flexible charging options? Is it the charging unit itself? Is it level shifting or voltage control circuitry? Is it buffering? Is it the intelligence for distinguishing battery types? Are any of the communications functions to be included in order to maximize flexibility? The Examiner has improperly turned to the teaching of Applicants' own specification as the motivation to combine the claimed elements in a particular manner to achieve "more flexible charging options", and has failed to indicate why the inclusion of more or less circuitry or

functions within the housing would alter the flexibility of the charging options provided by the cable.

With this clarification, i.e., that: 1) Applicants attack the Hsin reference not as if attacking one leg of a stool supported by three legs, but as attacking a key link in the chain of references and reasoning provided by the Examiner as being necessary to disclose the claimed features; and 2) Applicants attack the Examiner's offered motivation to combine these references, Applicants reiterate the arguments made in the previous amendment.

There is no disclosure in the combination of references from which a teaching of the "charging portion that communicates with the device controller for receiving at least one signal relative to the battery, the charging portion adjusting power... relative to the at least one signal..." There is not anything that suggests why one of ordinary skill in the art would place an entity that communicates with the device controller within the charger enclosed within the second connector of the cable. In fact, the disclosure of Hsin contains a significant absence of any circuit element that would appear to provide communication with a device controller, as well as a circuit element that would serve as a charging portion, as required by the claim. All that is disclosed in Hsin is the output port 14, discrete electrical components 21, light source 22, and switch. This would leave the mechanisms for communicating with the device controller presumably in the PC unit (see Hsin, Figure 4) as the only place that they could logically reside, and not in the USB charger in the cable connector.

Jeansonne (cited by the Examiner for other reasons) contains a similar lack of disclosure for this claimed feature.

For this reason, claim 12, and the claims that depend therefrom by virtue of their dependence, are not obvious over the combined teachings of Fischer, Hsin, and Jeansonne. Applicants respectfully request that this rejection be withdrawn from the application.

35 U.S.C. §103(A) Obviousness of Claims 14 and 17 over Fischer in view of Some Combination of Hsin, Jeansonne, Odoahhara, and Hsu

5. *Applicants rely upon the above arguments with respect to independent claim 12, and assert that none of the additional references supplants the deficiencies identified above with respect to the Fischer, Hsin, & Jeansonne.*

In the Office Action, on pp. 12–13, the Examiner supplemented the combination of Fischer, Hsin, and Jeansonne with the Odoahhara and Hsu references, the latter disclosing elements relevant to claims 14 and 17 respectively.

Without addressing the specifics of the additional references on the merits, Applicants rely upon the above arguments with respect to claim 12 and assert that the disclosures of each of these additional references, alone or in combination, does not serve to solve the deficiencies of the combination of Fischer, Hsin, and Jeansonne. The Examiner has cited these references for purposes related to the specifics of the dependent claims.

For these reasons, Applicants assert that the amended claim language clearly distinguishes over the prior art, and respectfully request that the Examiner withdraw the §103 rejections from the present application.

Conclusion

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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